

WHAT IS CLAIMED IS:

1. A training simulator for sharp shooting comprising:

a weapon unit equipped with an emitter unit comprising a light emitter and a cordless firing event detection means, said weapon unit also equipped with a means to activate both the light emitter and the firing event detection means simultaneously upon pulling a trigger of said weapon unit,

a screen unit comprising a screen having a diffusing reflective surface and a cordless firing event detection sensor positioned to receive a signal sent by said firing event detection means and adapted to send out a firing event electrical signal,

an optical unit having an optical target generation means to project an optical target onto said screen, said optical unit also equipped with a sensing means to detect whether said target has been hit by a light beam from said light emitter and reflected by said screen, said sensing means adapted to send a electrical signal, and

a central computer adapted to control the position of said target by operating said optical target generation means, said central computer adapted to receive said firing event electrical signal from said cordless firing event detection sensor, said central computer adapted also to receive the electrical signal from said sensing means to determine whether the target has been hit.

2. The simulator as in claim 1, wherein said cordless firing event detection means is an infrared emitter and said cordless

firing event detection sensor is an infrared sensor.

3. The simulator as in claim 1, wherein said weapon unit further comprising an optical aiming device and a telescoping viewfinder both mounted thereon.

4. The simulator as in claim 1, wherein said light emitter is a laser light emitter.

5. The simulator as in claim 4, wherein said laser light emitter is further equipped with a lens to project onto the screen a laser light beam having a diameter of about 10 mm to about 20 mm.

6. The simulator as in claim 1, wherein said light emitter is positioned on said weapon unit with a predetermined tilt to compensate for angle aiming offset.

7. The simulator as in claim 1, wherein said screen having a reflection capacity in the range of visible light of at least 80 per cent, said screen having a diffusing capacity from about 20 to about 30 degrees at the level of about 50 per cent reduction of its reflective coefficient.

8. The simulator as in claim 1, wherein said screen unit further comprising a visual display to indicate the shooting score.

9. The simulator as in claim 1 further comprising a video projector to project prerecorded or computer generated surrounding scenes onto said screen.

10. The simulator as in claim 9, wherein said video projector is

connected to and controlled by said central computer.

11. A training simulator for sharp shooting comprising:

a weapon unit equipped with a light emitter and a means to activate the light emitter upon pulling a trigger of said weapon unit to generate a firing light beam,

a screen having a diffusing reflective surface,

an optical unit having an optical target generation means to project an optical target beam onto said screen, said optical unit equipped with a sensing means adapted to send an electrical signal indicating a presence or absence of a firing light beam from said light emitter as reflected by said screen, said optical unit comprising a movable mirror system adapted to both direct said optical target beam from said optical target generation means to any predetermined area of said screen and to direct said firing light beam from said screen into said sensing means, said moveable mirror system providing for a common travel path along at least a portion of the optical axes of said light beam and said optical target beam, and

a central computer adapted to control the position of said optical target on said screen by operating said optical target generation means, said central computer adapted to receive the electrical signal from said sensing means to determine whether the target has been hit.

12. The simulator as in claim 11, wherein said sensing means is a light sensor.

13. The simulator as in claim 12, wherein said light sensor is a video camera.

14. The simulator as in claim 11, wherein said optical unit is further equipped with a light divider to reflect said firing light beam from said mirror system into said sensing means and to transmit said optical target beam from said target generating means to said mirror system.

15. The simulator as in claim 14, wherein said light divider is a dichroic mirror.

16. The simulator as in claim 11, wherein said movable mirror system comprising a pair of rotating mirrors and a fixed mirror, the position of said rotating mirrors individually controlled by said central computer, said mirrors rotating about optical axes perpendicular to each other.

17. The simulator as in claim 16, wherein each of said rotating mirrors further comprising a servomotor controlled by a common control unit operated by said central computer.

18. The simulator as in claim 17, wherein each of said servomotors is further equipped with a position sensor connected to said central computer to indicate the position of each of the rotating mirrors.

19. The simulator as in claim 11, wherein said optical target generation means is a laser.

20. A training simulator for sharp shooting comprising:

a weapon unit equipped with an emitter unit comprising a light emitter to send a firing light beam and an infrared emitter to send a firing event infrared beam, said weapon unit also equipped with a means to activate both the light emitter and the infrared emitter simultaneously upon pulling a trigger of said weapon unit,

a screen unit comprising a screen having a diffusing reflective surface and an infrared sensor positioned to receive the infrared beam from said infrared emitter and adapted to send out a firing event electrical signal,

an optical unit having an optical target generation means to project an optical target beam onto said screen, said optical unit equipped with a light sensor adapted to send an electrical signal indicating a presence or absence of a firing light beam from said light emitter after being reflected by said screen, said optical unit comprising a movable mirror system adapted to both direct said optical target beam from said optical target generation means to any predetermined area of said screen and to direct said firing light beam from said screen into said sensing means, said moveable mirror system providing for a common travel path along at least a portion of the optical axes of said light beam and said optical target beam, and

a central computer adapted to control the position of said target by operating said optical target generation means, said central computer adapted to receive said firing event electrical signal from said infrared sensor, said central computer adapted also to receive the electrical signal from said light sensor to determine whether the target has been hit.

21. The simulator as in claim 20 further equipped with a video

projector to project a prerecorded or computer-generated surrounding scene onto said screen and a visual display to indicate a shooting score, said video projector and said visual display operated by said central computer.